

In the Claims:

1 1. (withdrawn) A torque-transmitting assembly comprising:

2 a) a female coupling member with a bore;

3 b) a radially flexible member, received within the bore, defining a hollow shape
4 with an opening; and

5 c) an elongated shaft member made of a super-elastic alloy, received within the
6 opening,

7 whereupon relative motion among at least two of the members causes the
8 radially flexible member to contact the shaft, inducing a super-elastic activation in
9 the shaft that urges the shaft and radially flexible member into surface-to-surface
10 contact, securing the members together in a fixed relative position.

1 2. (withdrawn) The assembly of Claim 1 wherein the radially flexible member has
2 an external surface that frictionally engages the bore upon relative motion.

1 3. (withdrawn) The assembly of Claim 1 wherein the shaft is tubular with a
2 cannulation.

1 4. (withdrawn) The assembly of Claim 3 wherein the bore of the female coupling
2 member further comprises a cannulation aligned with the shaft cannulation, for
3 common passage of a guide wire there through.

- 1 5. (withdrawn) The assembly of Claim 1 further comprising an inter-positional
2 polymer sleeve for transmitting bending stress in the assembly.
- 1 6. (withdrawn) The assembly of Claim 1 wherein the contact occurs in one or
2 more areas that frictionally carries the applied torque.
- 1 7. (withdrawn) The assembly of Claim 6 wherein the contact area is calibrated so
2 that the contact slips at a preset torque before the failure strength of the shaft is
3 reached.
- 1 8. (withdrawn) The assembly of Claim 1 wherein the female coupling member
2 further comprises a counter-bore and the radially flexible member has an exterior
3 surface adapted for engagement within the counter-bore.
- 1 9. (withdrawn) The assembly of Claim 8 wherein the radially flexible member is
2 compressed within the counter-bore.
- 1 10. (withdrawn) The assembly of Claim 1 wherein the female coupling member is
2 a fitting that connects the assembly to a cutting tool-bit or powered instrument.
- 1 11. (withdrawn) The assembly of Claim 1 wherein the female coupling member
2 further comprises a fitting with a cutting tool-bit.
- 1 12. (withdrawn) The assembly of Claim 11 wherein the assembly is further
2 connected to a powered instrument.
- 1 13. (withdrawn) The assembly of Claim 1 wherein the radially flexible member is
2 a split collet.

1 14. (withdrawn) The assembly of Claim 1, the radially flexible member being in
2 the form of a collar and made of super-elastic alloy, wherein the relative motion
3 further induces a super-elastic activation of the collar.

1 15. (withdrawn) The assembly of Claim 1 wherein the collar further comprises a
2 washer.

1 16. (withdrawn) The assembly of Claim 15 wherein the collar further comprises a
2 series of washers.

1 17. (withdrawn) The assembly of Claim 14 wherein the super-elastic alloy is a
2 nickel-titanium alloy.

1 18. (currently amended) A torque-transmitting coupling assembly comprising:

2 a) a split collet member having an exterior surface and an opening;

3 b) an elongated, tubular shaft member made substantially of an alloy selected from
4 a group of alloys consisting of super-elastic, bi-metal alloys and super-elastic, tri-
5 metal alloys, including nickel-titanium super-elastic alloys, received within the
6 opening; and

7 c) a sleeve member having a bore that receives the exterior surface of the collet,
8 whereupon relative motion among at least two of the members causes the opening
9 to contact the shaft, ~~inducing a super-elastic activation in the shaft that urges the~~
10 shaft and the collet being urged into surface-to-surface contact sufficiently to
11 induce a martensitic activation of super-elastic alloy, thus securing the members
12 together in a fixed relative position.

- 1 19. (currently amended) The assembly of Claim 18 wherein interfering
2 engagement of the exterior surface with the bore compresses the opening against
3 the shaft, inducing the martensitic ~~super-elastic~~ activation in the shaft.
- 1 20. (original) The assembly of Claim 18 wherein the shaft is tubular with a
2 cannulation.
- 1 21. (original) The assembly of Claim 20 wherein either the sleeve or collet has a
2 cannulation aligned with the shaft cannulation, for common passage of a guide
3 wire there through.
- 1 22. (original) The assembly of Claim 18 further comprising an inter-positional
2 polymer sleeve for transmitting bending stress in the assembly.
- 1 23. (amended) The assembly of Claim 18 wherein surface-to-surface engagement
2 occurs along one or more contact areas that frictionally carries the applied torque.
- 1 24. (original) The assembly of Claim 23 wherein the contact area is calibrated to
2 slip at a preset torque before the failure strength of the shaft is reached.
- 1 25. (amended) The assembly of Claim 18 wherein the collet is adapted for
2 connection to a cutting tool fitting or powered instrument.
- 1 26. (amended) The assembly of Claim 18 wherein the collet further comprises a
2 cutting tool fitting.
- 1 27. (amended) The assembly of Claim 26 further adapted for coupling to a
2 powered instrument.
- 1 28. (withdrawn) A torque-transmitting coupling assembly comprising:

- 2 a) a fitting member formed with a counter-bore;
- 3 b) a collar member made of super-elastic alloy, having an exterior surface and an
- 4 opening, the collar being located in the counter-bore; and
- 5 c) an elongated shaft member made of a super-elastic alloy, received within the
- 6 opening;

7 whereupon relative motion between the fitting and the collar causes the

8 collar to contact the shaft, inducing a super-elastic activation in the shaft that

9 engages the shaft and collar into surface-to-surface contact, securing the members

10 together in a fixed relative position.

1 29. (withdrawn) The assembly of Claim 28 wherein engagement of the exterior

2 surface with the counter-bore super-elastically compresses the opening against the

3 shaft.

1 30. (withdrawn) The assembly of Claim 29 wherein the collar further comprises a

2 washer.

1 31. (withdrawn) The assembly of Claim 30 further comprising a series of washers.

1 32. (withdrawn) The assembly of Claim 28 wherein the super-elastic alloy is a

2 nickel-titanium alloy.

1 33. (withdrawn) The assembly of Claim 28 wherein the shaft is tubular with a

2 cannulation.

1 34. (withdrawn) The assembly of Claim 33 wherein the fitting has a cannulation
2 aligned with the shaft cannulation, for common passage of a guide wire there
3 through.

1 35. (withdrawn) The assembly of Claim 28 further comprising an inter-positional
2 polymer sleeve for transmitting bending stress in the assembly.

1 36. (withdrawn) The assembly of Claim 29 wherein the frictional engagement
2 occurs along one or more contact areas that frictionally carries the applied torque.

1 37. (withdrawn) The assembly of Claim 36 wherein the contact area is calibrated
2 so that the coupling slips at a preset torque before the fatigue strength of the shaft
3 is reached.

1 38. (withdrawn) The assembly of Claim 28 wherein the fitting is connected to a
2 cutting tool-bit or powered instrument.

1 39. (withdrawn) The assembly of Claim 28 wherein the fitting further comprises a
2 cutting tool-bit.

1 40. (withdrawn) The assembly of Claim 39 further coupled to a powered
2 instrument.

1 41. (withdrawn) A method of forming a torque-transmitting assembly, comprising
2 the steps of:

3 a) providing a female coupling member with a bore;

4 b) providing a radially flexible member with an external surface and an opening,
5 situating the radially flexible member within the bore

6 c) providing an elongated shaft member made of a super-elastic alloy, received
7 within the opening; and

8 d) relatively moving at least two of the members, causing the radially flexible
9 member to contact the shaft, inducing a super-elastic activation in the shaft that
10 urges the shaft and radially flexible member into surface-to-surface contact,
11 securing the members together in a fixed relative position.

1 42. (withdrawn) The method of Claim 41 wherein step d) further comprises
2 frictionally engaging the members along a contact area that carries the applied
3 torque, the contact area being calibrated to slip at a preset torque before the failure
4 strength of the shaft is reached.

1 43. (withdrawn) The method of Claim 42 further comprising the steps of providing
2 the female coupling member with a counter-bore, providing the radially flexible
3 member in the form of a collar made of super-elastic alloy and inducing a super-
4 elastic activation in the collar.

1 44. (withdrawn) The method of Claim 42 wherein step a) further comprises providing a
2 radially flexible member in the form of a split collet.

1 45. (withdrawn) A flexible surgical reamer having a torque-transmitting assembly
2 and comprising:

3 a) a fitting member formed with a counter-bore and including a cutting tool-bit;

4 b) a collar member made of super-elastic alloy, located in the counter-bore; and

5 c) an elongated shaft member made of a super-elastic alloy, adapted for receipt
6 within the collar;

7 whereupon relative motion among the members causes the opening to
8 contact the shaft, inducing a super-elastic activation in the shaft that urges the shaft
9 and the collar into surface-to-surface contact, securing the members together in a
10 fixed relative position.

1 46. (withdrawn) The reamer of Claim 45 wherein the collar is an annular member.

1 47. (withdrawn) The reamer of Claim 46 wherein the collar further comprises a
2 washer.

1 48. (withdrawn) The reamer of Claim 47 wherein the collar further comprises a
2 series of washers.

1 49. (withdrawn) The reamer of Claim 48 wherein the collar is pre-assembled with
2 the fitting.

1 50. (withdrawn) The reamer of Claim 45 further comprising an inter-positional
2 polymer sleeve for transmitting bending stress in the assembly.

1 51. (withdrawn) The reamer of Claim 45 wherein the contact occurs along an area
2 that frictionally carries the applied torque.

1 52. (withdrawn) The reamer of Claim 51 wherein the contact area is calibrated to slip at
2 a preset torque before the failure strength of the shaft is reached.

1 53. (withdrawn) The reamer of Claim 45 wherein the shaft is tubular, with a
2 cannulation.

1 54. (withdrawn) The reamer of Claim 53 wherein the fitting has a cannulation that
2 aligns with the shaft cannulation for passage of a guide wire through the reamer.

1 55. (withdrawn) A flexible surgical reamer having a torque-transmitting assembly
2 and comprising:

3 a) a radially flexible member having a split collet with an exterior surface and an
4 opening, and including a cutting tool-bit;

5 b) an elongated shaft member made of a super-elastic alloy, received within the
6 opening; and

7 c) a sleeve having a bore that receives the exterior surface,

8 whereupon relative motion among the members causes the opening to contact the
9 shaft, inducing a super-elastic activation in the shaft that urges the shaft and the
10 collet into surface-to-surface contact, securing the members together in a fixed
11 relative position.

1 56. (withdrawn) The reamer of Claim 55 wherein the exterior surface is
2 compressed by the bore, further contracting the opening against the shaft to induce
3 the super-elastic activation.

1 57. (withdrawn) The reamer of Claim 55 wherein the shaft is tubular with a
2 cannulation for passage of a guide wire there through.

1 58. (withdrawn) The reamer of Claim 56 wherein the opening interferingly
2 receives the shaft and is expanded to compress the exterior surface against the
3 bore.

- 1 59. (withdrawn) The reamer of Claim 55 further comprising an inter-positional
2 polymer sleeve for transmitting bending stress in the assembly.
- 1 60. (withdrawn) The reamer of Claim 55 wherein the contact occurs along an area
2 that frictionally carries the applied torque.
- 1 61. (withdrawn) The reamer of Claim 60 wherein the contact area is calibrated to
2 slip at a preset torque before the failure strength of the shaft is reached.
- 1 62. (withdrawn) The reamer of Claim 61 wherein the shaft is further connected to
2 a powered instrument.